STUDIES ON SOME IMINES AND THEIR METAL COMPLEXES.

A Synopsis Submitted To

Swami Ramanand Teerth Marathwada University Nanded.

For the Degree of

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Under the Faculty of Science

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Abstract of proposed work / problem

1] INTRODUCTION:

A huge number of Schiff bases containing azomethine groups and their complexes have been investigated physical, chemical and chelating activities as well as biological properties. Several heterocyclic aldehydes are used for synthesis of Schiff's bases. Heterocyclic compounds are most important type of moiety due to their use in industrial study and drugs. Schiff's base ligand with oxygen and nitrogen atom in their structure showed remarkable activities like antibacterial, antifungal, anticancer, diuretic activities. Number of complexes of pyrazol-5-one derivatives such as antipyrine, 4-dimethyl-aminoantipyrine, 4-aminoantipyrine and 3-methyl-1-phenylpyrazol-5-one have been synthesized and some of them found to be DNA cleavage agents with or without sequence specificity. Moreover the ligands or the metal in these complexes can be varied in an easily controlled manner to facilitate the individual application.

2] Review of Literature and Development in the subject (previous work done in the relevant area):

In literature it is found that various polymerization reactions and epoxidation are catalyzed by metal complexes of Schiff bases. Gilheany and Megarrigle have given a clear discussion of asymmetric and achiral epoxidation of alkenes catalyzed by chromium, manganese-salene complexes.

Taking account, the synthetic protocol for the preparation of complexes derived from aldehydes, aminoantipyrine and dione involves three steps as

a) Synthesis of β-diketone.
b) Synthesis of Schiff bases.
c) Synthesis of metal complexes under reflux conditions.

3] Objectives of Research / proposed Hypothesis:

In the present work, efforts have been taken to synthesize a new series of Nitrogen, Oxygen type complexes derived from Amines, aldehyde, aminoantipyrine and dione compounds using solid supported catalyst in two steps as

i) Synthesis of Schiff's bases.
ii) Synthesis of Metal complexes.

The synthesized Schiff bases have been screened by various spectroscopic (IR, NMR,UV) techniques.

Similarly the synthesized transition metal complexes also screened by various spectroscopic, magnetic and thermal (TGA/ DTA) study. Both Schiff bases and their metal complexes will screened with biological activity.

4] Methodology to be adopted:

Various methods have been adopted for the synthesis of Schiff's bases and its metal complexes like template and non template, sonication, microwave and by using different types of catalyst.

In the present work efforts have been taken to synthesize new series of ligand and complexes by using standard method. The synthesized Schiff's bases and its metal complexes have been screened by various physio-chemical techniques such as UV, Molar conductance, elemental analysis, IR, 1H NMR, EPR ,XRD, TGA, DTA and antimicrobial activity.

5] Importance of study / society application:

We hope the work of this research will be useful to researcher, pharmacist, chemist and medicinal field on the national and international level. This research work pursuit the studies in scientific and biological problems such as anticancer, diuretic activities and DNA claves agent. The preset work will also be useful to the research in the field of coordination chemistry. since it has huge scope for the further development in future.

6] Proposed work plan / Formulation and structure of study:

Year – wise plan of work and targets to be achieved

Ist year plan:

The collections of basic materials required for this research. This includes collections of Journals, Books, and some research papers related to the research. Also by rule of SRTMU Nanded complete the course work in the preset year. Also few libraries and intuitions like TIFR, IIS, NCL, AICT and some universities will be visited for this purpose. Progress reports will be submitted in given time.

IInd year plan:

The collected material will be proceed and attempt will made to discover the finding in direction of research different methodology , tools techniques and guidance will be apply for new research problems. Some national and international visits of the guidance work verifications, methodology verifications. To The study of new research problem in different from and it will be submitted to research journals for publication. Progress reports will be submitted in given time.

III rd year plan:

The outcome of the our research work will be presented in national and international gatherings such as seminars, workshops, conferences during this year. The research work will be published in the several journals. The printing and binding of the project work. The papers of project work based on existence theory will be communicated to the different national and international journals publications. Progress reports will be submitted in given time. And submissions of final synopsis will be done in this year.

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